CLAIMS

We claim:

1. A method of performing a mobile terminal hand-over, comprising:

establishing concurrent communication connections between the mobile terminal and a plurality of base station transceivers using a plurality of different communication channels, wherein respective ones of the plurality of base station transceivers are associated with respective ones of the plurality of different communication channels.

2. The method of Claim 1, wherein the plurality of different communication channels comprise at least one communication channel associated with a first communication band of contiguous communication channels and at least one communication channel associated with a second communication band of contiguous communication channels.

3. The method of Claim 2, wherein the first communication band of contiguous communication channels comprises a code division multiple access (CDMA) 800 MHz communication band, and the second communication band of contiguous communication channels comprises a CDMA 1900 MHz communication band.

4. The method of Claim 1, wherein the plurality of different communication channels is associated with a communication band of contiguous communication channels.

5. The method of Claim 4, wherein establishing concurrent communication connections between the mobile terminal and the plurality of base station transceivers using the plurality of different communication channels comprises:

sampling the communication band of contiguous communication channels at the mobile terminal to detect a plurality of signals received from the plurality of base

station transceivers, wherein respective ones of the plurality of received signals are associated with respective ones of the plurality of base station transceivers; and

concurrently demodulating the detected plurality of signals received from the plurality of base station transceivers.

6. The method of Claim 5, further comprising:

filtering signals received by the mobile terminal using a bandpass filter that passes frequencies corresponding to the communication band of contiguous communication channels before sampling the communication band of contiguous communication channels at the mobile terminal to detect the plurality of signals received from the plurality of base station transceivers.

7. The method of Claim 4, wherein establishing concurrent communication connections between the mobile terminal and the plurality of base station transceivers using the plurality of different communication channels comprises:

filtering signals received by the mobile terminal using a bandpass filter that passes frequencies corresponding to the communication band of contiguous communication channels;

stepping down signals received by the mobile terminal and passed by the bandpass filter from frequencies corresponding to the communication band of contiguous communication channels to a band of intermediate frequencies;

sampling the band of intermediate frequencies at the mobile terminal to detect a plurality of signals received from the plurality of base station transceivers, wherein respective ones of the plurality of received signals are associated with respective ones of the plurality of base station transceivers; and

concurrently demodulating the detected plurality of signals received from the plurality of base station transceivers.

8. The method of Claim 1, wherein the mobile terminal is associated with an original one of the plurality of base station transceivers, the method further comprising:

selecting one of the plurality of base station transceivers other than the one of the plurality of base station transceivers with which the mobile terminal is associated;

creating a new association between the mobile terminal and the selected one of the plurality of base station transceivers; then

destroying the association between the mobile terminal and the original one of the plurality of base station transceivers.

9. The method of Claim 1, wherein establishing concurrent communication connections between the mobile terminal and the plurality of base station transceivers using the plurality of different communication channels comprises:

concurrently demodulating at the mobile terminal a plurality of signals received from the plurality of base station transceivers, wherein respective ones of the plurality of received signals are associated with respective ones of the plurality of base station transceivers; and

concurrently transmitting a plurality of signals from the mobile terminal to the plurality of base station transceivers, wherein respective ones of the transmitted signals are associated with respective ones of the plurality of base station transceivers.

10. The method of Claim 9, wherein concurrently demodulating at the mobile terminal the plurality of signals received from the plurality of base station transceivers comprises:

concurrently stepping down respective ones of the plurality of signals received from the plurality of base station transceivers from a plurality of non-baseband frequencies, which respectively correspond to the plurality of different communication channels, to a baseband frequency; and

wherein concurrently transmitting the plurality of signals from the mobile terminal to the plurality of base station transceivers comprises:

concurrently stepping up respective ones of a plurality of information signals from the baseband frequency to the plurality of non-baseband frequencies, which respectively correspond to the plurality of different communication channels.

11. The method of Claim 10, wherein concurrently stepping down respective ones of the plurality of signals received from the plurality of base station transceivers from the plurality of non-baseband frequencies, which respectively correspond to the plurality of different communication channels, to the baseband frequency comprises:

concurrently stepping down respective ones of the plurality of signals received from the plurality of base station transceivers from the plurality of non-baseband frequencies, which respectively correspond to the plurality of different communication channels, to an intermediate frequency; and

concurrently stepping down respective ones of the plurality of signals received from the plurality of base station transceivers from the intermediate frequency to the baseband frequency.

12. The method of Claim 10, wherein concurrently stepping up respective ones of the plurality of information signals from the baseband frequency to the plurality of non-baseband frequencies, which respectively correspond to the plurality of different communication channels, comprises:

concurrently stepping up respective ones of the plurality of information signals from the baseband frequency to an intermediate frequency; and

concurrently stepping up respective ones of the plurality of information signals from the intermediate frequency to the plurality of non-baseband frequencies, which respectively correspond to the plurality of different communication channels.

13. A receiver, comprising:

a plurality of phase locked loop circuits that generate a plurality of reference signals, respective ones of the plurality of phase locked loop circuits generating respective ones of the plurality of reference signals; and

a plurality of mixer circuits that generate a plurality of information signals at a baseband frequency, respective ones of the plurality of mixer circuits generating respective ones of the plurality of information signals at the baseband frequency responsive to respective ones of the plurality of reference signals output from respective ones of the plurality of phase locked loop circuits and respective ones of a plurality of signals received from respective ones of a plurality of communication

apparatus, wherein respective ones of the plurality of signals received from respective ones of the plurality of communication apparatus are respectively associated with a plurality of different communication channels.

14. The receiver of Claim 13, wherein the plurality of communication apparatus comprise a plurality of base station transceivers.

15. The receiver of Claim 13, further comprising:

a signal multiplier that generates a scaled output signal responsive to the reference signal output from a first one of the plurality of phase locked loop circuits;

a mixer circuit that generates an output signal responsive to the reference signal output from a second one of the plurality of phase locked loop circuits and the scaled output signal; and

an offset phase locked loop circuit that generates an output signal having a frequency that is approximately equal to a frequency difference between the scaled output signal and the reference signal output from the second one of the plurality of phase locked loop circuits, the second one of the plurality of phase locked loop circuits being responsive to the output signal of the mixer circuit and the output signal of the offset phase locked loop circuit.

16. A receiver, comprising:

a plurality of radio frequency phase locked loop circuits that generate a plurality of reference signals, respective ones of the plurality of radio frequency phase locked loop circuits generating respective ones of the plurality of reference signals; and

a first plurality of mixer circuits that generate a plurality of output signals at a plurality of intermediate frequencies, respective ones of the first plurality of mixer circuits generating respective ones of the plurality of output signals at respective ones of the plurality of intermediate frequencies responsive to respective ones of the plurality of reference signals output from respective ones of the plurality of radio frequency phase locked loop circuits and respective ones of a plurality of signals received from respective ones of a plurality of communication apparatus, wherein respective ones of the plurality of signals received from respective ones of the

plurality of communication apparatus are respectively associated with a plurality of different communication channels.

17. The receiver of Claim 16, wherein the plurality of communication apparatus comprise a plurality of base station transceivers.

18. The receiver of Claim 16, wherein the plurality of intermediate frequencies comprise a same frequency.

19. The receiver of Claim 16, further comprising:

a plurality of intermediate frequency channel filters that generate a plurality of output signals, respective ones of the plurality of intermediate frequency channel filters generating respective ones of the plurality of output signals responsive to respective ones of the plurality of output signals from respective ones of the first plurality of mixer circuits;

an intermediate frequency phase locked loop circuit that generates a reference signal; and

a second plurality of mixer circuits that generate a plurality of information signals at a baseband frequency, respective ones of the second plurality of mixer circuits generating respective ones of the plurality of information signals at the baseband frequency responsive to the reference signal output from the intermediate frequency phase locked loop circuit and respective ones of the plurality of output signals from respective ones of the plurality of intermediate frequency channel filters.

20. The receiver of Claim 16, further comprising:

a signal multiplier that generates a scaled output signal responsive to the reference signal output from a first one of the plurality of radio frequency phase locked loop circuits;

a mixer circuit that generates an output signal responsive to the reference signal output from a second one of the plurality of radio frequency phase locked loop circuits and the scaled output signal; and

an offset phase locked loop circuit that generates an output signal having a frequency that is approximately equal to a frequency difference between the scaled

output signal and the reference signal output from the second one of the plurality of radio frequency phase locked loop circuits, the second one of the plurality of radio frequency phase locked loop circuits being responsive to the output signal of the mixer circuit and the output signal of the offset phase locked loop circuit.

21. A receiver, comprising:

a mixer circuit that generates an output signal at an intermediate frequency responsive to a reference signal and respective ones of a plurality of signals received from respective ones of a plurality of communication apparatus, wherein respective ones of the plurality of signals received from respective ones of the plurality of communication apparatus are respectively associated with different communication channels of a communication band comprising a plurality of contiguous communication channels;

an intermediate frequency bandpass filter that generates an output signal having a bandwidth that corresponds to the communication band responsive to the output signal of the mixer circuit; and

a demodulator that is responsive to the output signal from the intermediate frequency bandpass filter.

22. The receiver of Claim 21, wherein the plurality of communication apparatus comprise a plurality of base station transceivers.

23. The receiver of Claim 21, further comprising:

an analog to digital converter that generates a digital output signal responsive to the output signal of the intermediate frequency bandpass filter; and

a sampling unit that generates a sample sequence of the digital output signal, the demodulator being responsive to the sample sequence of the digital output signal.

24. A receiver, comprising:

a radio frequency bandpass filter that generates an output signal having a bandwidth that corresponds to a communication band comprising a plurality of contiguous communication channels responsive to respective ones of a plurality of signals received from respective ones of a plurality of communication apparatus,

wherein respective ones of the plurality of signals received from respective ones of the plurality of communication apparatus are respectively associated with different communication channels of the communication band; and

a demodulator that is responsive to the output signal of the radio frequency bandpass filter.

25. The receiver of Claim 24, wherein the plurality of communication apparatus comprise a plurality of base station transceivers.

26. The receiver of Claim 24, further comprising:

an analog to digital converter that generates a digital output signal responsive to the output signal from the radio frequency bandpass filter; and

a sampling unit that generates a sample sequence responsive to the digital output signal from the analog to digital converter, the demodulator being responsive to the sample sequence output from the sampling unit.

27. A transmitter, comprising:

a plurality of phase locked loop circuits that generate a plurality of reference signals, respective ones of the plurality of phase locked loop circuits generating respective ones of the plurality of reference signals; and

a plurality of mixer circuits that generate a plurality of transmit signals at a plurality of different radio frequencies, respective ones of the plurality of mixer circuits generating respective ones of the plurality of transmit signals at respective ones of the plurality of radio frequencies responsive to respective ones of the plurality of reference signals output from respective ones of the plurality of phase locked loop circuits and respective ones of a plurality of information signals at a baseband frequency.

28. The transmitter of Claim 27, further comprising:

a signal multiplier that generates a scaled output signal responsive to the reference signal output from a first one of the plurality of phase locked loop circuits;

a mixer circuit that generates an output signal responsive to the reference signal output from a second one of the plurality of phase locked loop circuits and the scaled output signal; and

an offset phase locked loop circuit that generates an output signal having a frequency that is approximately equal to a frequency difference between the scaled output signal and the reference signal output from the second one of the plurality of phase locked loop circuits, the second one of the plurality of phase locked loop circuits being responsive to the output signal of the mixer circuit and the output signal of the offset phase locked loop circuit.

29. A transmitter, comprising:

a plurality of intermediate frequency phase locked loop circuits that generate a plurality of reference signals, respective ones of the intermediate frequency phase locked loop circuits generating respective ones of the plurality of reference signals; and

a first plurality of mixer circuits that generate a plurality of output signals at a plurality of intermediate frequencies, respective ones of the first plurality of mixer circuits generating respective ones of the plurality of output signals at respective ones of the plurality of intermediate frequencies responsive to respective ones of the plurality of reference signals output from respective ones of the plurality of intermediate frequency phase locked loop circuits and respective ones of a plurality of information signals at a baseband frequency.

30. The transmitter of Claim 29, wherein the plurality of intermediate frequencies comprise a same frequency.

31. The transmitter of Claim 29, further comprising:

a plurality of intermediate frequency channel filters that generate a plurality of output signals, respective ones of the plurality of intermediate frequency channel filters generating respective ones of the plurality of output signals responsive to respective ones of the plurality of output signals from respective ones of the first plurality of mixer circuits;

a plurality of radio frequency phase locked loop circuits that generate a plurality of reference signals, respective ones of the plurality of radio frequency phase locked loop circuits generating respective ones of the plurality of reference signals; and

a second plurality of mixer circuits that generate a plurality of transmit signals at a plurality of different radio frequencies, respective ones of the second plurality of mixer circuits generating respective ones of the plurality of transmit signals at respective ones of the plurality of different radio frequencies responsive to respective ones of the plurality of reference signals output from respective ones of the plurality radio frequency phase locked loop circuits and respective ones of the plurality of output signals from respective ones of the plurality of intermediate frequency channel filters.

32. The transmitter of Claim 31, further comprising:

a signal multiplier that generates a scaled output signal responsive to the reference signal output from a first one of the plurality of radio frequency phase locked loop circuits;

a mixer circuit that generates an output signal responsive to the reference signal output from a second one of the plurality of radio frequency phase locked loop circuits and the scaled output signal; and

an offset phase locked loop circuit that generates an output signal having a frequency that is approximately equal to a frequency difference between the scaled output signal and the reference signal output from the second one of the plurality of radio frequency phase locked loop circuits, the second one of the plurality of radio frequency phase locked loop circuits being responsive to the output signal of the mixer circuit and the output signal of the offset phase locked loop circuit.

33. The transmitter of Claim 29, further comprising:

a signal multiplier that generates a scaled output signal responsive to the reference signal output from a first one of the plurality of intermediate frequency phase locked loop circuits;

a mixer circuit that generates an output signal responsive to the reference signal output from a second one of the plurality of intermediate frequency phase locked loop circuits and the scaled output signal; and

an offset phase locked loop circuit that generates an output signal having a frequency that is approximately equal to a frequency difference between the scaled output signal and the reference signal output from the second one of the plurality of intermediate frequency phase locked loop circuits, the second one of the plurality of intermediate frequency phase locked loop circuits being responsive to the output signal of the mixer circuit and the output signal of the offset phase locked loop circuit.

34. A transmitter, comprising:

an intermediate frequency modulator that generates an output signal responsive to an information signal at a baseband frequency;

an intermediate frequency bandpass filter that generates an output signal having a bandwidth that corresponds to a communication band comprising a plurality of contiguous communication channels responsive to the output signal of the intermediate frequency modulator; and

a mixer circuit that generates a transmit signal at a radio frequency having a bandwidth that corresponds to the communication band comprising the plurality of contiguous communication channels responsive to the output signal of the intermediate frequency bandpass filter.

35. A transmitter, comprising:

a radio frequency modulator that generates an output signal having a bandwidth that corresponds to a communication band comprising a plurality of contiguous communication channels responsive to an information signal at a baseband frequency; and

a radio frequency bandpass filter that generates a transmit signal responsive to the output signal of the radio frequency modulator.

36. A system for performing a mobile terminal hand-over, comprising:

means for establishing concurrent communication connections between the mobile terminal and a plurality of base station transceivers using a plurality of

different communication channels, wherein respective ones of the plurality of base station transceivers are associated with respective ones of the plurality of different communication channels.

37. The system of Claim 36, wherein the plurality of different communication channels comprise at least one communication channel associated with a first communication band of contiguous communication channels and at least one communication channel associated with a second communication band of contiguous communication channels.

38. The system of Claim 37, wherein the first communication band of contiguous communication channels comprises a code division multiple access (CDMA) 800 MHz communication band, and the second communication band of contiguous communication channels comprises a CDMA 1900 MHz communication band.

39. The system of Claim 36, wherein the plurality of different communication channels is associated with a communication band of contiguous communication channels.

40. The system of Claim 39, wherein the means for establishing concurrent communication connections between the mobile terminal and the plurality of base station transceivers using the plurality of different communication channels comprises:

means for sampling the communication band of contiguous communication channels at the mobile terminal to detect a plurality of signals received from the plurality of base station transceivers, wherein respective ones of the plurality of received signals are associated with respective ones of the plurality of base station transceivers; and

means for concurrently demodulating the detected plurality of signals received from the plurality of base station transceivers.

41. The system of Claim 40, further comprising:

means for filtering signals received by the mobile terminal using a bandpass filter that passes frequencies corresponding to the communication band of contiguous communication channels, the means for sampling the communication band of contiguous communication channels at the mobile terminal to detect the plurality of signals received from the plurality of base station transceivers being responsive to the means for filtering signals received by the mobile terminal using the bandpass filter that passes frequencies corresponding to the communication band of contiguous communication channels.

42. The system of Claim 39, wherein the means for establishing concurrent communication connections between the mobile terminal and the plurality of base station transceivers using the plurality of different communication channels comprises:

means for filtering signals received by the mobile terminal using a bandpass filter that passes frequencies corresponding to the communication band of contiguous communication channels;

means for stepping down signals received by the mobile terminal and passed by the bandpass filter from frequencies corresponding to the communication band of contiguous communication channels to a band of intermediate frequencies;

means for sampling the band of intermediate frequencies at the mobile terminal to detect a plurality of signals received from the plurality of base station transceivers, wherein respective ones of the plurality of received signals are associated with respective ones of the plurality of base station transceivers; and

means for concurrently demodulating the detected plurality of signals received from the plurality of base station transceivers.

43. The system of Claim 36, wherein the mobile terminal is associated with an original one of the plurality of base station transceivers, the system further comprising:

means for selecting one of the plurality of base station transceivers other than the one of the plurality of base station transceivers with which the mobile terminal is associated;

means for creating a new association between the mobile terminal and the selected one of the plurality of base station transceivers; and

means for destroying the association between the mobile terminal and the original one of the plurality of base station transceivers responsive to the means for creating the new association between the mobile terminal and the selected one of the plurality of base station transceivers.

44. The system of Claim 36, wherein the means for establishing concurrent communication connections between the mobile terminal and the plurality of base station transceivers using the plurality of different communication channels comprises:

means for concurrently demodulating at the mobile terminal a plurality of signals received from the plurality of base station transceivers, wherein respective ones of the plurality of received signals are associated with respective ones of the plurality of base station transceivers; and

means for concurrently transmitting a plurality of signals from the mobile terminal to the plurality of base station transceivers, wherein respective ones of the transmitted signals are associated with respective ones of the plurality of base station transceivers.

45. The system of Claim 44, wherein the means for concurrently demodulating at the mobile terminal the plurality of signals received from the plurality of base station transceivers comprises:

means for concurrently stepping down respective ones of the plurality of signals received from the plurality of base station transceivers from a plurality of non-baseband frequencies, which respectively correspond to the plurality of different communication channels, to a baseband frequency; and

wherein the means for concurrently transmitting the plurality of signals from the mobile terminal to the plurality of base station transceivers comprises:

means for concurrently stepping up respective ones of a plurality of information signals from the baseband frequency to the plurality of non-baseband frequencies, which respectively correspond to the plurality of different communication channels.

46. The system of Claim 45, wherein the means for concurrently stepping down respective ones of the plurality of signals received from the plurality of base station transceivers from the plurality of non-baseband frequencies, which respectively correspond to the plurality of different communication channels, to the baseband frequency comprises:

means for concurrently stepping down respective ones of the plurality of signals received from the plurality of base station transceivers from the plurality of non-baseband frequencies, which respectively correspond to the plurality of different communication channels, to an intermediate frequency; and

means for concurrently stepping down respective ones of the plurality of signals received from the plurality of base station transceivers from the intermediate frequency to the baseband frequency.

47. The system of Claim 45, wherein the means for concurrently stepping up respective ones of the plurality of information signals from the baseband frequency to the plurality of non-baseband frequencies, which respectively correspond to the plurality of different communication channels, comprises:

means for concurrently stepping up respective ones of the plurality of information signals from the baseband frequency to an intermediate frequency; and

means for concurrently stepping up respective ones of the plurality of information signals from the intermediate frequency to the plurality of non-baseband frequencies, which respectively correspond to the plurality of different communication channels.